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Abstract of the national paper of Argentina

1. The present document describes the current status of space activities in Argentina, in line with the operations carried out under the five action areas, A-E, defined in the National Space Plan.

A. Ground infrastructure

2. Activities in this action area have included the following:

(a) *Ground station for satellite data acquisition*. The station continued to operate during 1998, receiving data from the Land Remote-Sensing Satellite (Landsat), the European Remote Sensing Satellite (ERS) and the Satellite pour l'observation de la Terre (SPOT) Earth observation satellite of France. It is planned to install a further antenna, 13 metres in diameter, in 1999;

(b) *Ground station for satellite tracking, telemetry and command*. The station successfully carried out mission SAC-A under the National Space Plan;

(c) *New ground station for data acquisition and satellite tracking, telemetry and command*. In 1998, work proceeded on the design and development of a second station to be built in the Province of Tierra del Fuego in the year 2000.

B. Satellite systems

3. Activities have included:

(a) *SAC-C satellite mission*. During 1998, the flight operations of satellite SAC-C were examined and the environmental qualification tests were completed at the National Institute for Space Research (INPE) in Brazil. The satellite's launch is scheduled for December 1999;

(b) *SAC-A satellite mission*. The technology satellite SAC-A has been developed for technological demonstration mission purposes with the specific objectives of gathering experience in the area of satellite mission operations and of testing critical satellite components. SAC-A was placed in orbit on 14 December 1998 from the space shuttle Endeavour and is operating successfully;

(c) *Other missions in the SAC series* have included:

(i) *Central European Satellite for Advanced Research mission*. The aspects dealing with the definition of the mission and its viability phase have been formulated jointly with Spain;

(ii) *SABIA3 mission*. The work relating to phase A, the viability stage, has been commenced on this joint mission with Brazil involving the Argentine-Brazilian Food, Water and Environment Data Satellite SABIA3;

(iii) *Observation and Communications Satellite missions*. The different possibilities have been examined and a mission definition in terms of its technical parameters has been prepared. Meetings have been held with the Italian Space Agency in view of the possibility of combining the SAOCOM mission with the SkyMed-COSMO mission.

C. Information systems

4. Operations in this area are as follows:

(a) *Regional Satellite Data Centre of the National Commission for Space Activities (CONAE)*. During 1998, the Centre continued to maintain national and international Internet links for CONAE and other governmental agencies of the country, providing access to satellite image and related space information databases;

(b) *Telemedicine project*. Development of applications and communications technologies for setting up a pilot scheme. A network has been established with its central node at the Teófilo Tabanera Space Centre, three principal nodes at hospitals in the city of Cordoba, five remote nodes in the interior of the Province and one at the Marambio base in the Antarctic;

(c) *Applications in flood control*. In view of the emergency situation caused by flooding as a result of the El Niño phenomenon, CONAE has implemented a nationwide programme involving the delivery of satellite images to public agencies directly involved. This contribution has made it possible to monitor the flood line, estimate and predict soil moisture levels, monitor the entire area liable to flooding, carry out ground mapping and implement a programme for the generation of a flood valley model in the medium term;

(d) *Applications in non-renewable resources*. In connection with mining operations, CONAE has maintained close links with the Argentine Geological Mining Service and makes satellite images available to its members. For the oil industry, human and equipment resources have been developed in order to process and analyse satellite information. CONAE provides the Military Geographic Institute with satellite images for cartographic updating work on the territory of Argentina;

(e) *Applications in agriculture*. CONAE and the Federation of Grain Harvesting Associations and Centres have developed an agricultural crop information system that incorporates harvest technology and is based on the use of satellite products and climatic and hydrological variables. A pilot agricultural monitoring project involving the use of satellite technology for the purpose of obtaining accurate and updated information on agricultural production in the pilot area of Chilcas, Province of Entre Rios, Argentina;

(f) *Distribution of satellite images and promotion of their applications*. During 1998, the Unit for Satellite Image Distribution and Promotion of Satellite Image Applications was established. More than 800 images have been distributed to public and private organizations.

D. Access to space

5. The National Executive has instructed CONAE to incorporate the item "Means of access to space and launch services" into the National Space Plan on an equal basis with the generation of complete space information cycles. This has been achieved by making relevant amendments to the "Access to space" action area, in conformity with the current national and global technological situation and in line with Argentina's foreign policy, its non-proliferation policy and the international undertakings assumed by it in this connection, and by encouraging a gradual and continuous increase in the country's intellectual and technological participation.

6. In late 1998, the firm Veng S.A. was set up with the aim of developing new-generation space vehicles through unconventional mechanisms of financing by the private sector and scientific and technological bodies.

E. Institutional development and basic operations

7. Activities have included the following:

(a) *Scientific activities*

(i) Selection of the second group of Argentine experiments to be carried on board the mission STS-101 space shuttle. The participants in this project are primary and secondary schools and universities of the federal capital and several provinces;

(ii) Continuation of the Total Ozone Mapping Spectrometer Earth Probe programme for ozone measuring from satellites, in cooperation with the National Aeronautics and Space Administration (NASA) of the United States of America and the National University of Rosario; development of operations for irradiation measuring and evaluation of solar risk factors;

(iii) Continuation of the ChagaSpace project, involving the search for drugs to combat Chagas' disease, in cooperation with NASA, the National Institute of Parasitology and research institutes in Brazil, Chile, Costa Rica, Mexico and Uruguay;

(iv) In September 1998 an opportunity announcement was made for the use of data from Argentine instruments on board satellite SAC-C and over 80 proposals from Argentina and several neighbouring countries have been received and approved;

(b) *Institutional links*. CONAE provides support to the National Executive on specific topics, such as the Missile Control System and the National System of War Material and Sensitive Imports and Exports. As the authority responsible for administering the National Registry of Objects Launched into Outer Space, CONAE recorded the entry relating to satellite SAC-A in 1998;

(c) *Cooperation with national institutions*. The execution of the National Space Plan involves the participation of various Argentine scientific, technological and industrial bodies. A number of framework agreements have been signed, six of which were implemented in 1998;

(d) Organization of scientific meetings. Meeting on the evaluation of natural disasters, in particular flooding, based on satellite images (Buenos Aires); Argentine Remote Sensing Symposium, 1998 (Buenos Aires); Second Remote Sensing Education Symposium (Luján), with the support of the University of Luján; Second Latin American Radar Remote Sensing Symposium (Santos), in collaboration with INPE; National Seminar GlobeSar2 on the use of radar images, in collaboration with the Canadian Centre for Remote Sensing; Entre Ríos

International Course in Remote Sensing Applications, with the support of the University of Entre Ríos and the German Aerospace Centre (DLR);

(e) *International cooperation*

(i) *Germany*. Work has continued on the telemedicine programme, which includes the Argonauta project, which is financed in part by the European Community, and the Agricultural Applications project in Entre Ríos, both in cooperation with DLR;

(ii) *Brazil*. Three specific cooperation agreements have been signed with the Brazilian Space Agency: (a) development of satellite SABIA3; (b) launch of a sounding rocket from Brazil with an Argentine payload; and (c) harmonization of ground systems operations on space missions;

(iii) *Canada*. CONAE has continued to serve as coordinator of the Argentine groups participating in the GlobeSar2 programme sponsored by Canada;

(iv) *Spain*. A joint declaration on cooperation in space science and technology has been signed with the National Institute for Aerospace Technology of Spain;

(v) *United States of America*. Work relating to the SAC-C project is continuing with NASA. Satellite SAC-A was placed in orbit by the space shuttle Endeavour. In October, the space shuttle Discovery launched into space experiments of primary and secondary school pupils under the Germinar education project of CONAE;

(vi) *France*. An agreement has been signed with the Centre national d'études spatiales of France for the provision of the Icare instrument to be installed on satellite SAC-C for the mission's scientific purposes;

(vii) Italy: An agreement has been signed with the Italian Space Agency for the provision by Italy of the instruments and solar panel mechanisms for the SAC-C mission.